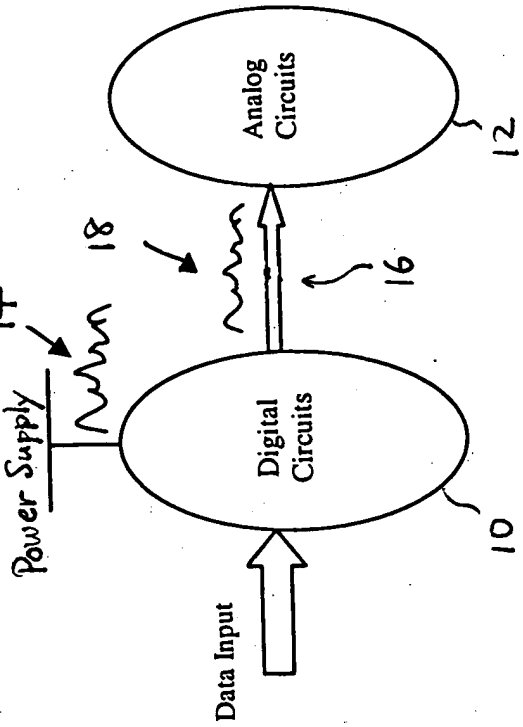
David B. Ritchie
Thelen Reid & Priest, LLP
Express Mail No.: EV 263 601 086 US
TRP Docket No.: 032593-000090



PRIOR ART

FIG. 1

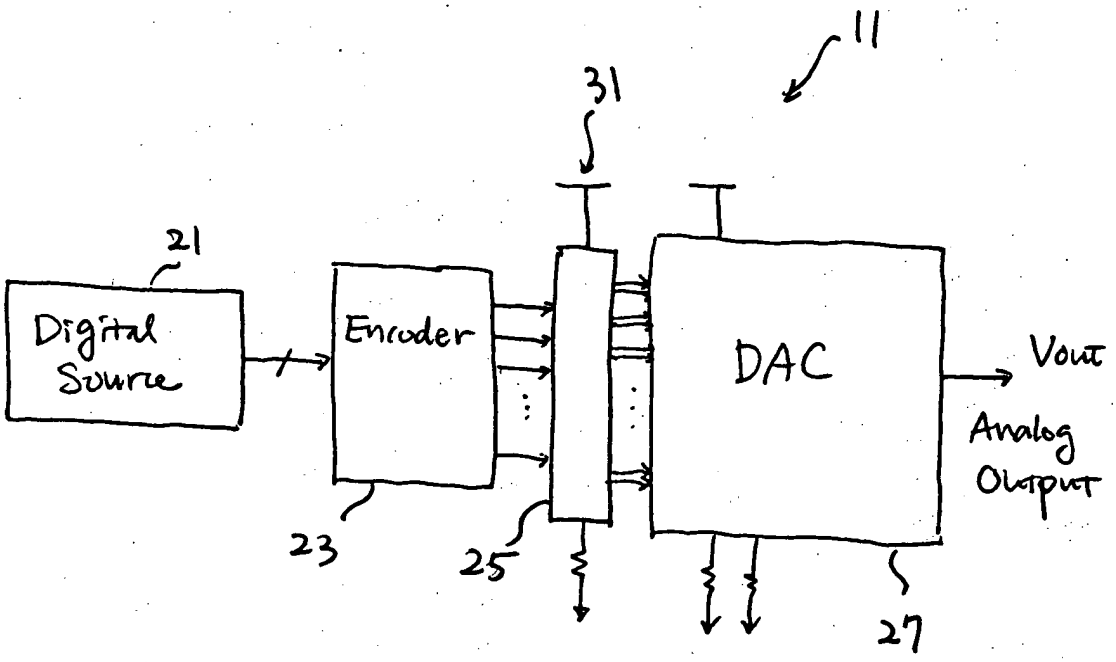

11
31
21
Digital Source
Encoder
DAC
Vout
Analog Output
23
25
27

FIG. 2A

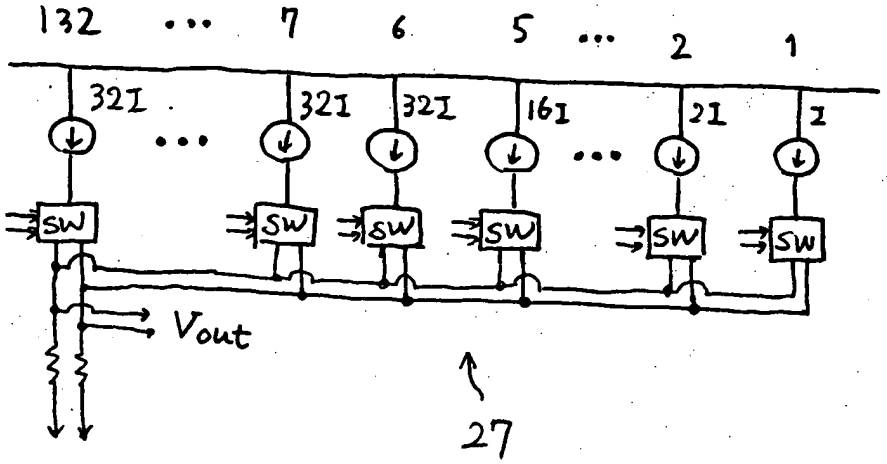

132
7
6
5
2
1
32I
32I
32I
16I
2I
I
SW
Vout
27

FIG. 2B

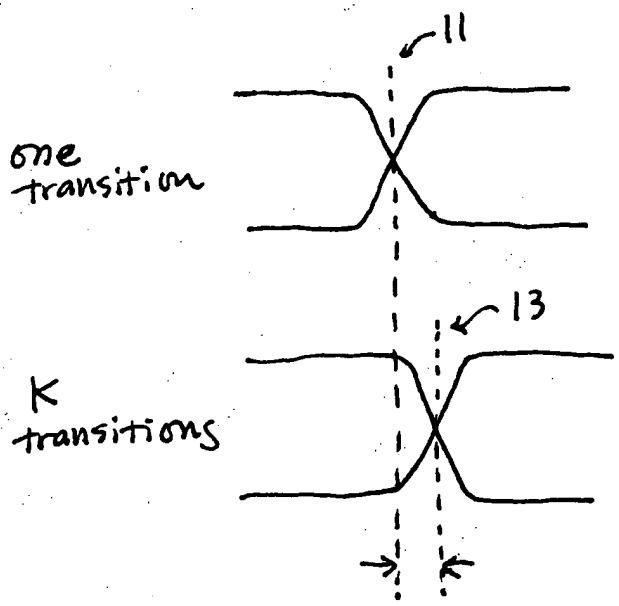


FIG. 2C

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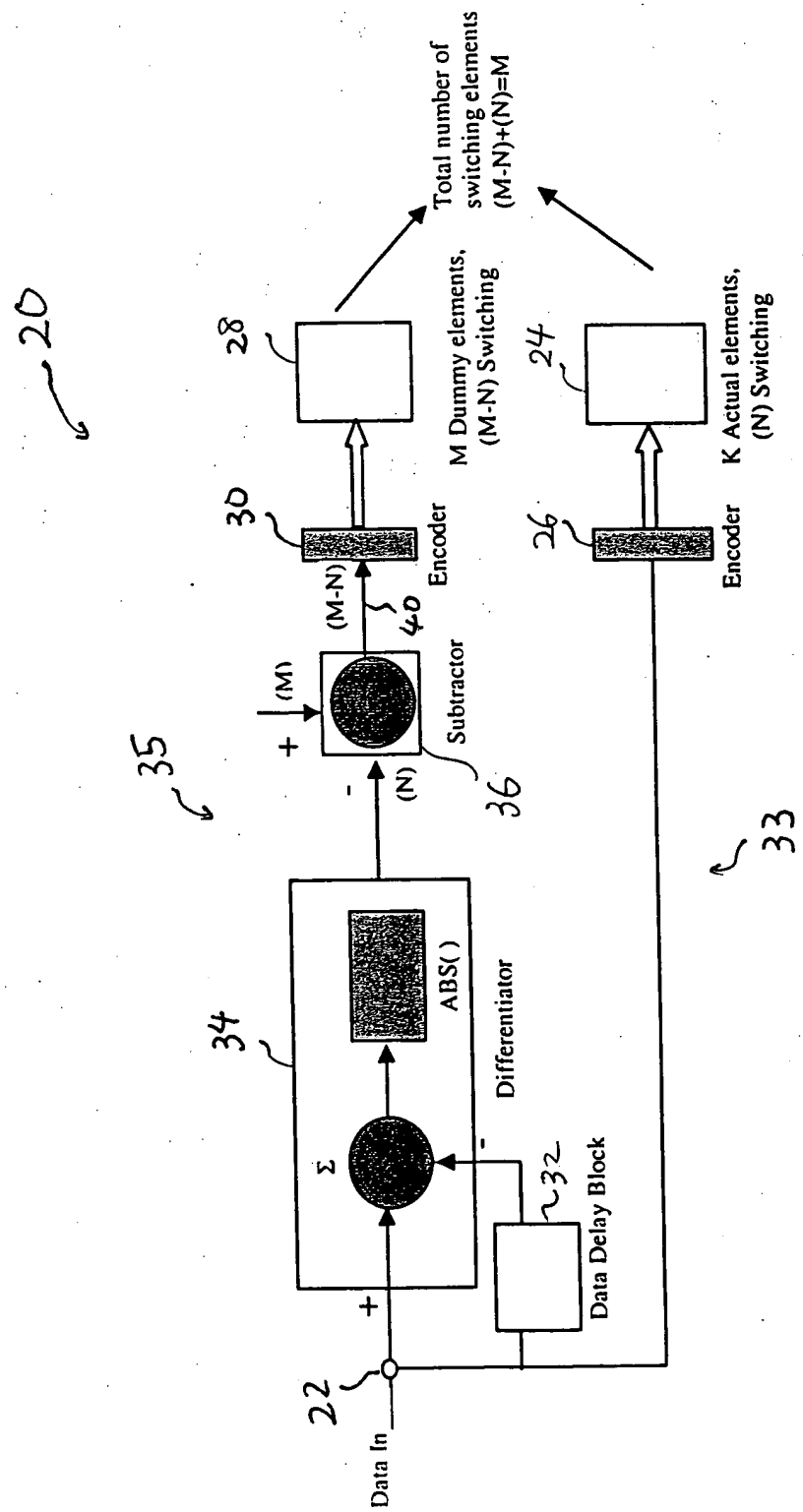

FIG. 3

DAC example 1 (7-bit Thermometer Encoded, 5-bit Binary Encoded), K=132

Signal Frequency (MHz)	Number of Transitions/Switching (N)
0.5	6
1	8
2	10
3	13
4	15
5	17
6	21
7	23
8	26
9	28
10	31

FIG. 4

DAC Example 2 (10-bit Thermometer Encoded, 2-bit Binary Encoded), K=1025

Signal Frequency (MHz)	Number of Transition/Switching (N)
0.5	14
1	24
2	45
3	66
4	88
5	108
6	130
7	152
8	173
9	193
10	214

FIG. 5

DAC Example 3 (2-bit Thermometer Encoded, 10-bit Binary Encoded), K=13

Signal Frequency (MHz)	Number of Transition/Switching (N)
0.5	9
1	10
2	10
3	11
4	10
5	9
6	10
7	10
8	9
9	10
10	10

FIG. 6

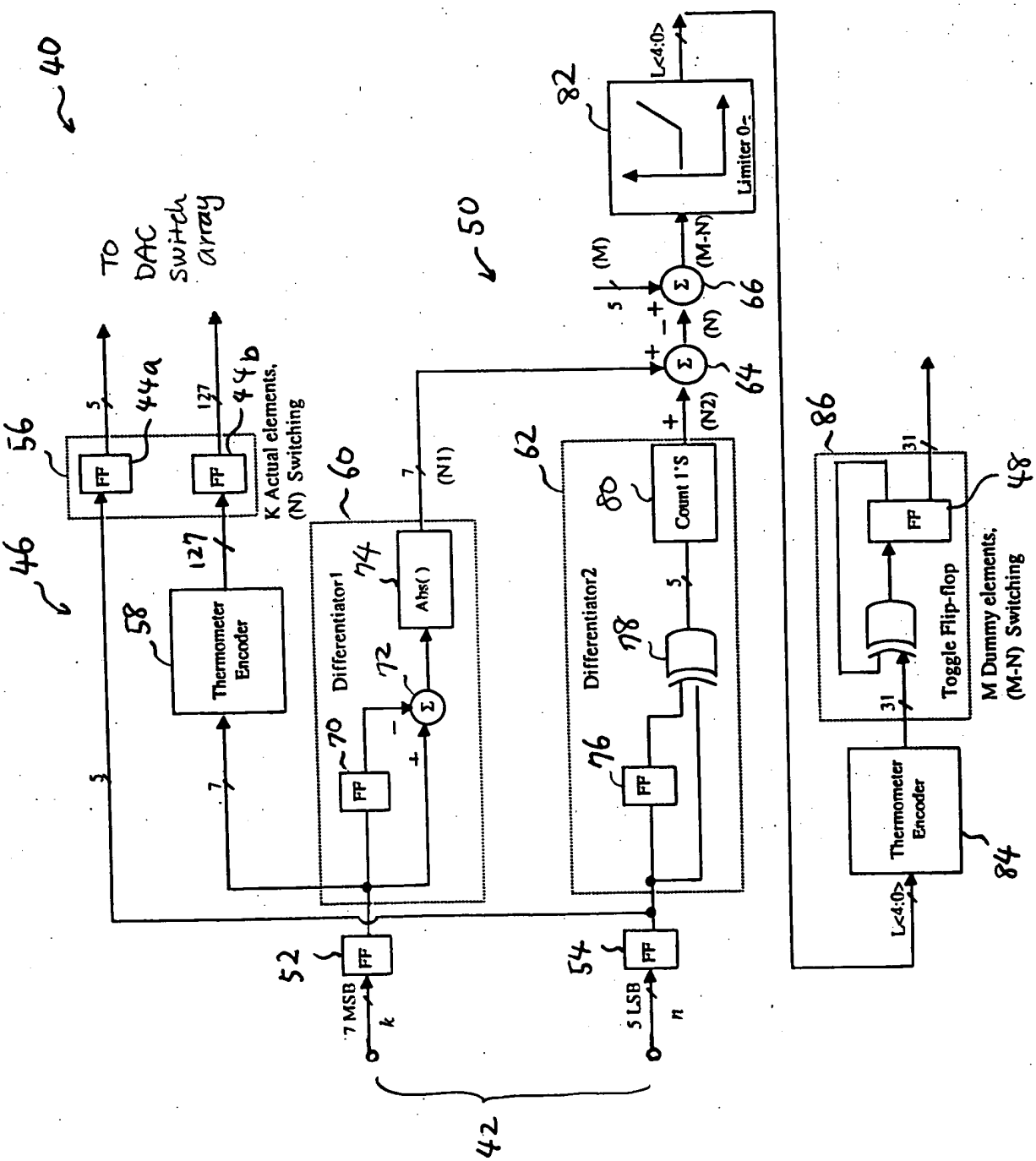
40
50
TO DAC Switch array
56
44a
44b
K Actual elements, (N) Switching
46
58
Thermometer Encoder
127
60
Differentiator1
74
Abs()
72
70
FF
(N1)
62
Differentiator2
80
Count 1'S
(N2)
78
76
64
66
(M)
(M-N)
(N)
82
Limiter 0-
L<4:0>
86
48
Toggle Flip-flop
M Dummy elements, (M-N) Switching
84
Thermometer Encoder
52
54
7 MSB
5 LSB
42

FIG. 7

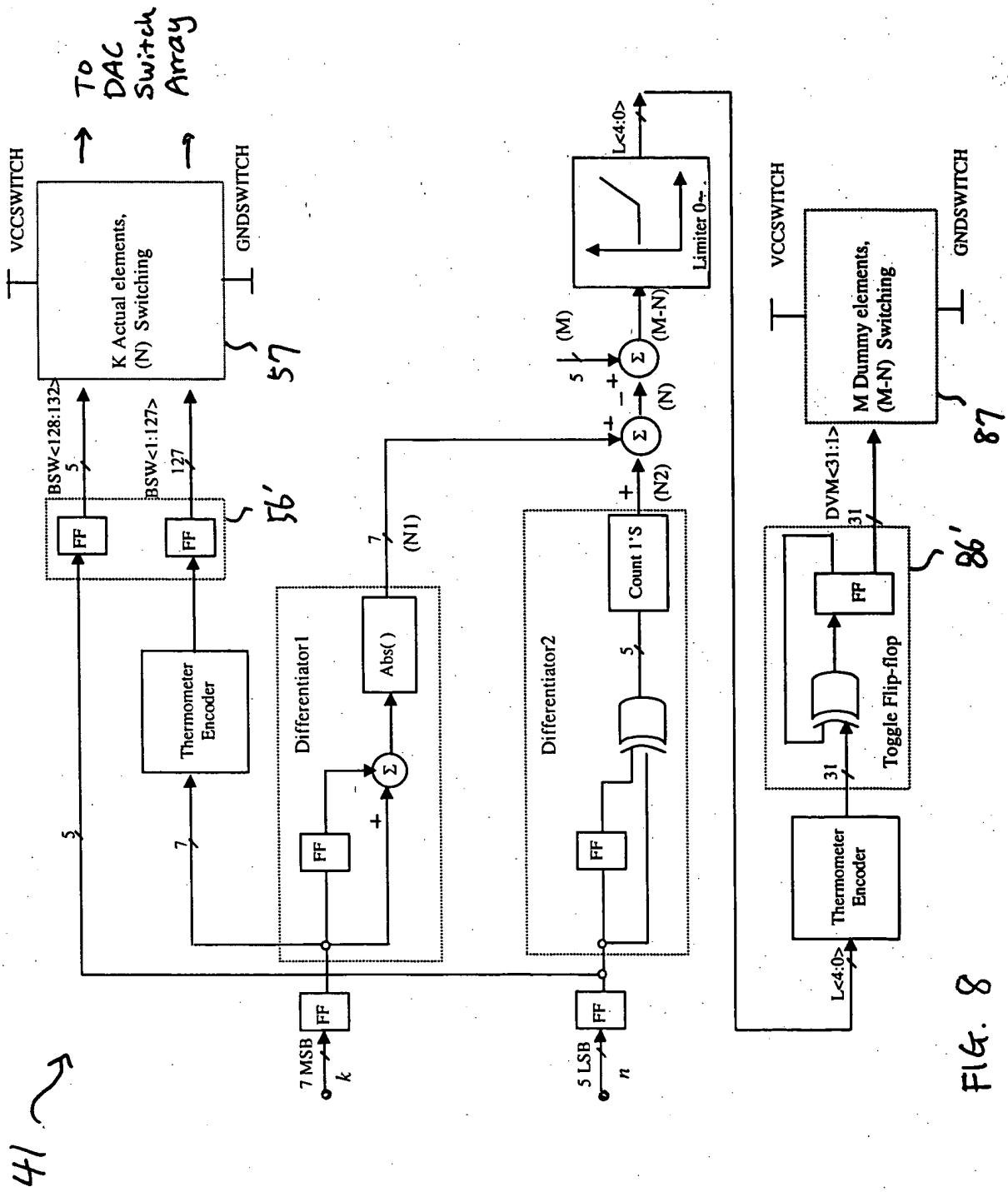
41
To DAC Switch Array
VCCSWITCH
GNDSWITCH
K Actual elements, (N) Switching
57
BSW<128:132>
BSW<1:127>
56'
FF
Thermometer Encoder
Differentiator1
Abs( )
(N1)
Differentiator2
Count 1'S
(N2)
(M)
(N)
(M-N)
Limiter 0~
L<4:0>
7 MSB
k
5 LSB
n
M Dummy elements, (M-N) Switching
87
DVM<31:1>
Toggle Flip-flop
86'

FIG. 8

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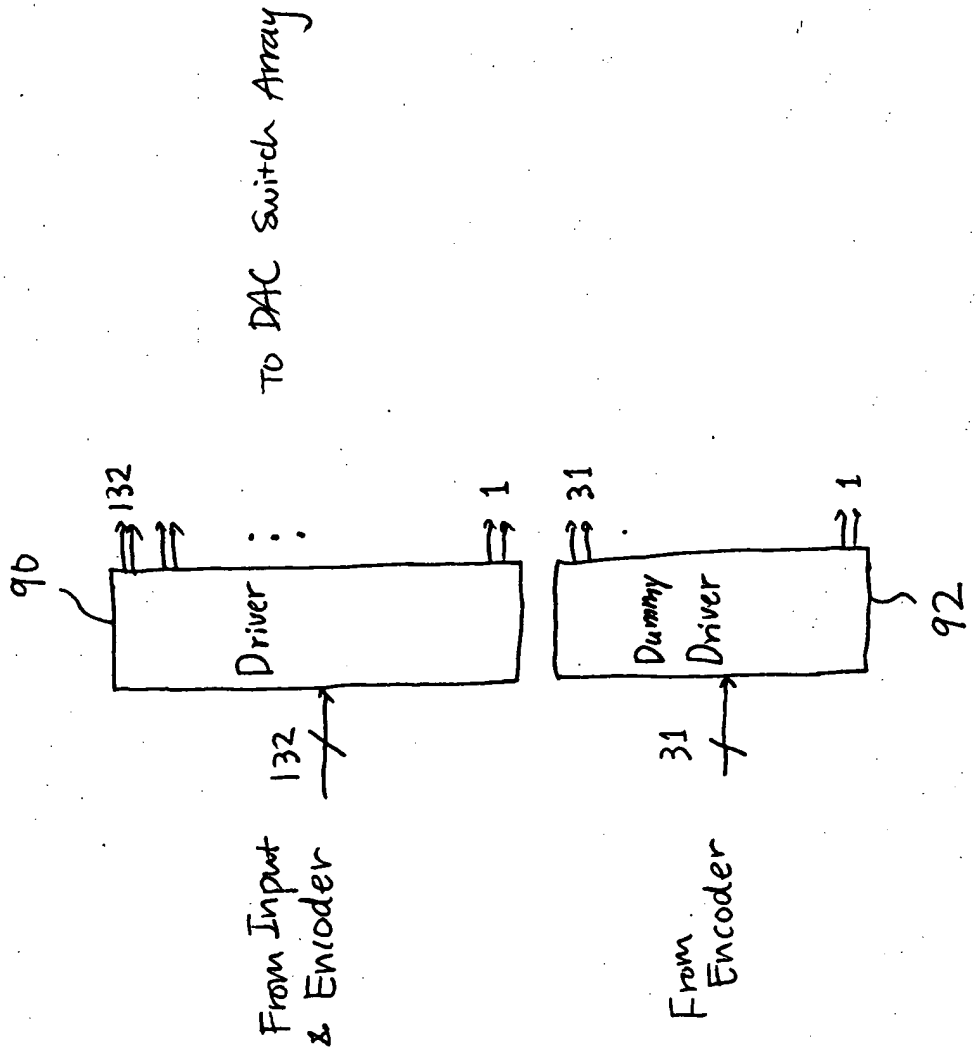

FIG. 9

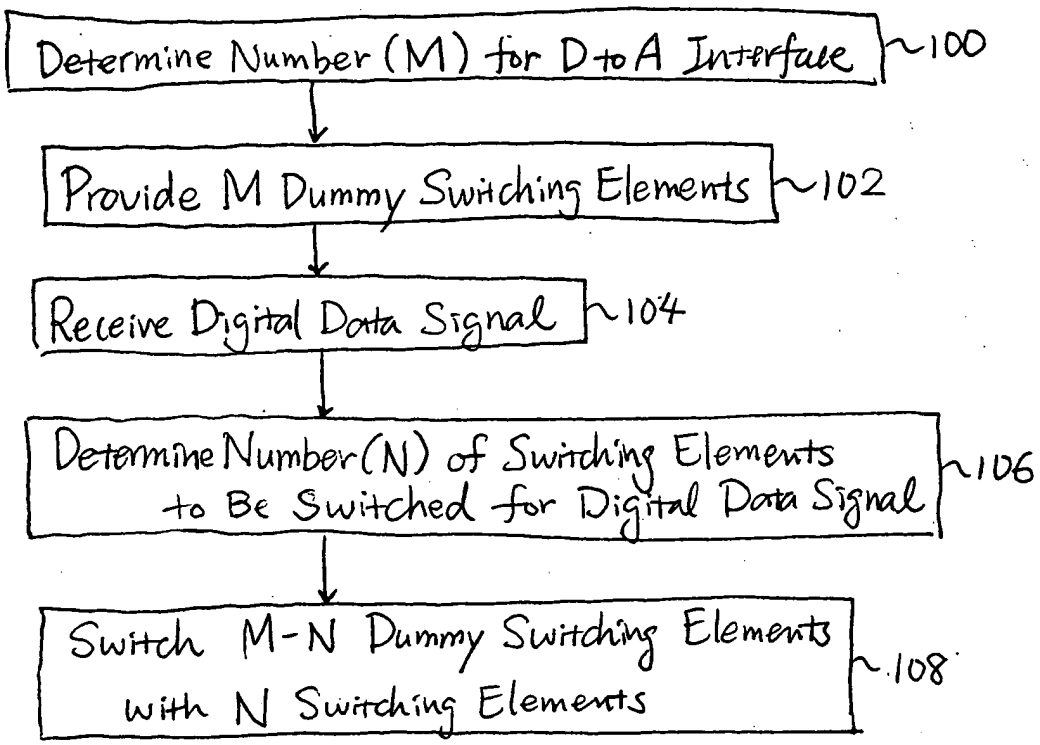
Determine Number (M) for D-to-A Interface
100
Provide M Dummy Switching Elements
102
Receive Digital Data Signal
104
Determine Number (N) of Switching Elements to Be Switched for Digital Data Signal
106
Switch M-N Dummy Switching Elements with N Switching Elements
108

FIG. 10

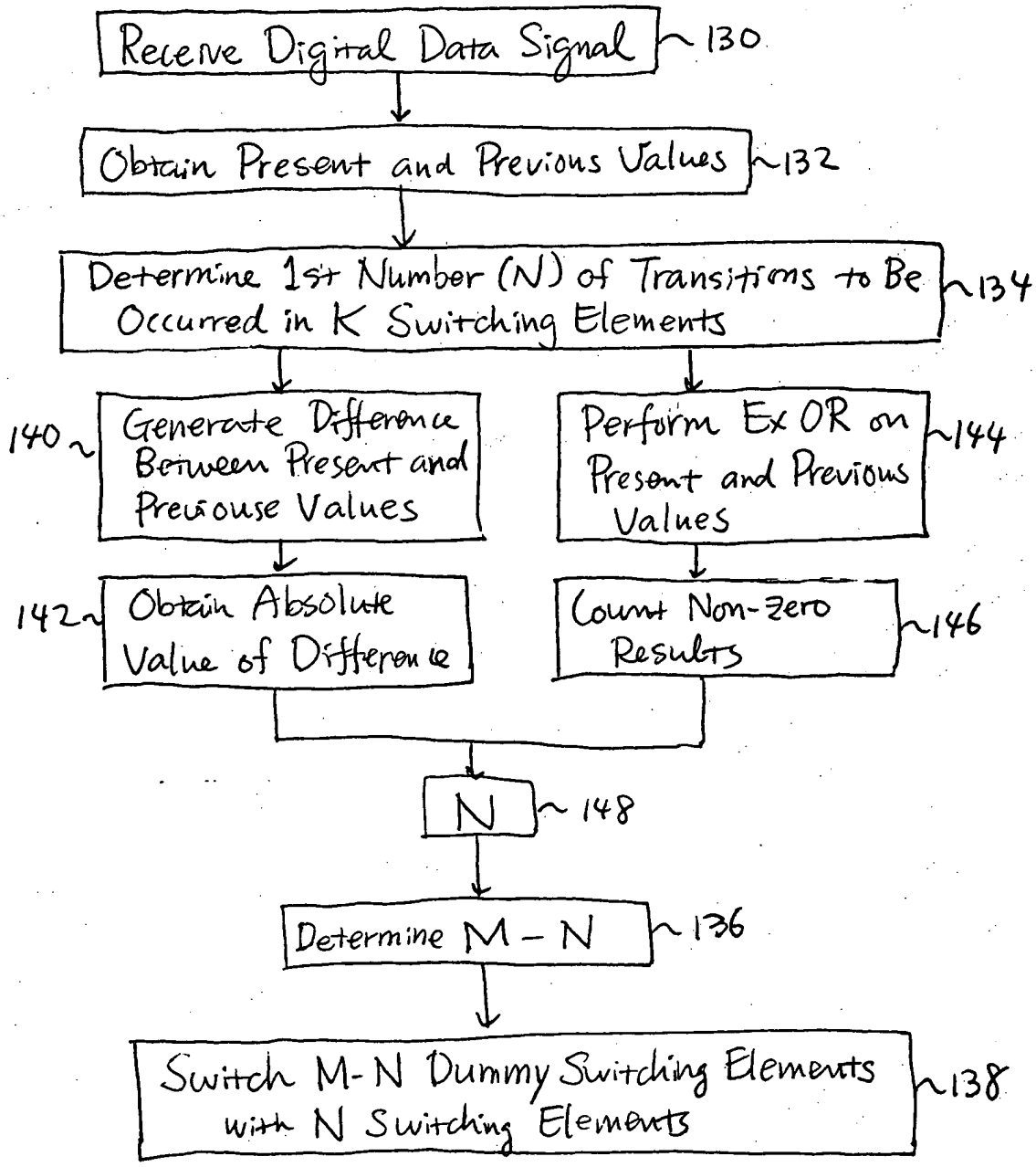
Receive Digital Data Signal
130
Obtain Present and Previous Values
132
Determine 1st Number (N) of Transitions to Be Occurred in K Switching Elements
134
140
Generate Difference Between Present and Previous Values
142
Obtain Absolute Value of Difference
Perform Ex OR on Present and Previous Values
144
Count Non-Zero Results
146
N
148
Determine M - N
136
Switch M-N Dummy Switching Elements with N Switching Elements
138

FIG. 11